

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES

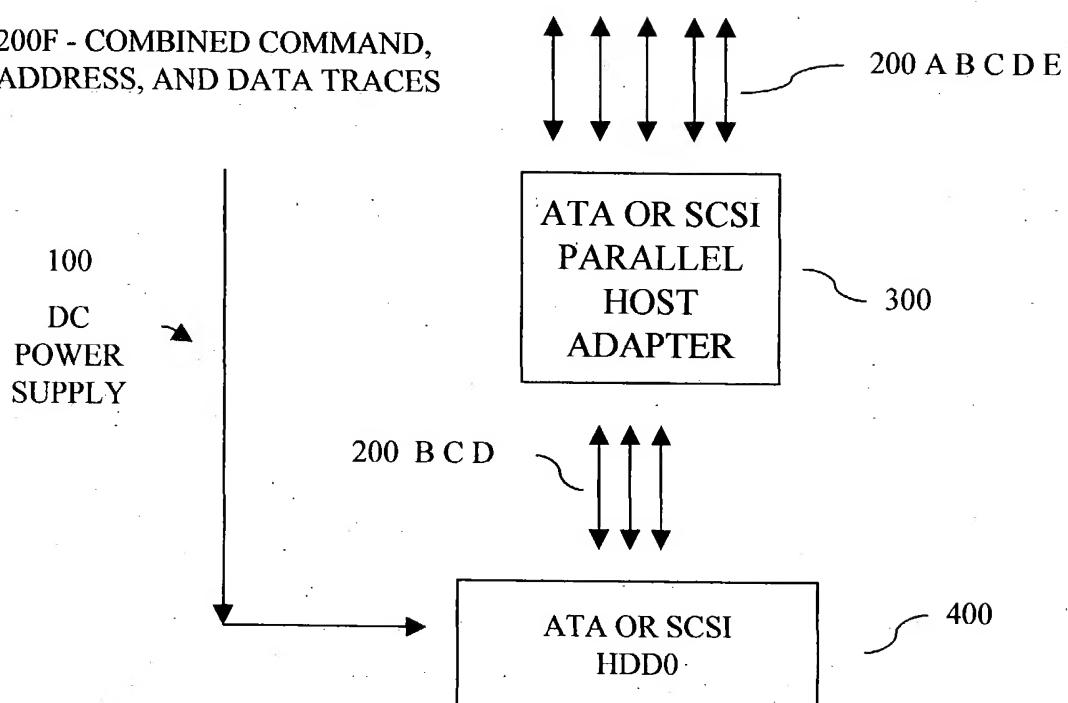


FIGURE 1: TYPICAL RELATIONSHIP OF PARALLEL HARD DISK DRIVE, ATA OR SCSI, TO HOST ADAPTER, SYSTEM BUS, AND POWER TRACES FROM SYSTEM POWER SUPPLY.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

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OF BUS SYSTEM

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OF BUS SYSTEM

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BUS SYSTEM

200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES

100  
DC  
POWER  
SUPPLY



USB OR  
IEEE1394  
SERIAL HOST  
ADAPTER

300

200 A F

USB OR IEEE1394  
SERIAL HDD0

400

FIGURE 2: TYPICAL RELATIONSHIP OF USB OR IEEE 1394 SERIAL HARD DISK  
DRIVE TO HOST ADAPTER, SYSTEM BUS, AND POWER TRACES  
FROM SYSTEM POWER SUPPLY.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

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OF BUS SYSTEM

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OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES

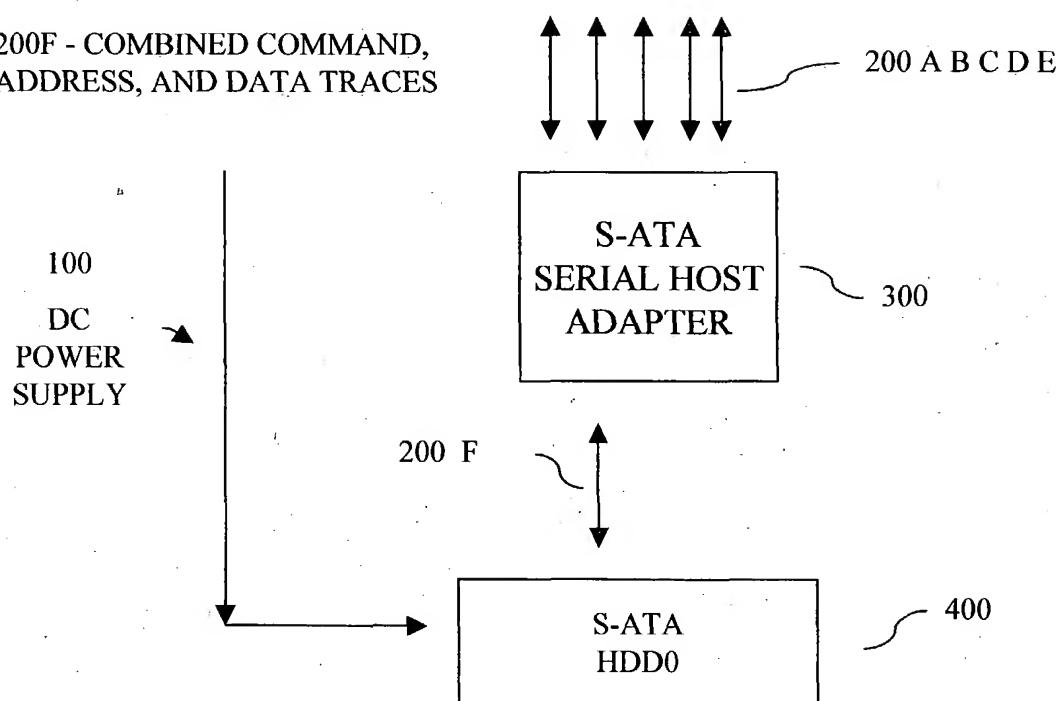


FIGURE 3: TYPICAL RELATIONSHIP OF S-ATA SERIAL HARD DISK DRIVE TO  
HOST ADAPTER, SYSTEM BUS, AND POWER TRACES FROM SYSTEM  
POWER SUPPLY.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

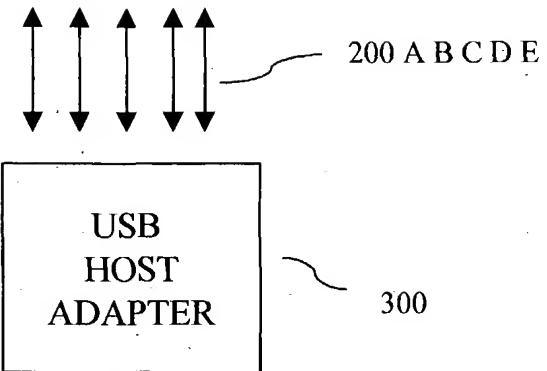
200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

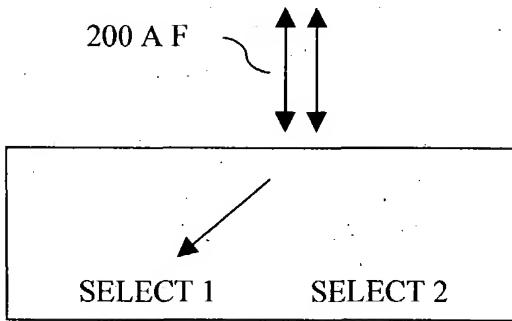
200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES



SERIAL HARD  
DISK DRIVE  
SELECTOR

500



400

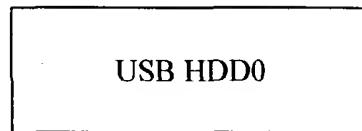
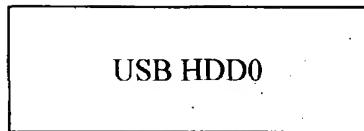


FIGURE 4: THIS INVENTION USED IN THE ENVIRONMENT OF USB  
SERIAL HARD DISK DRIVES; SELECTION 1 MADE.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

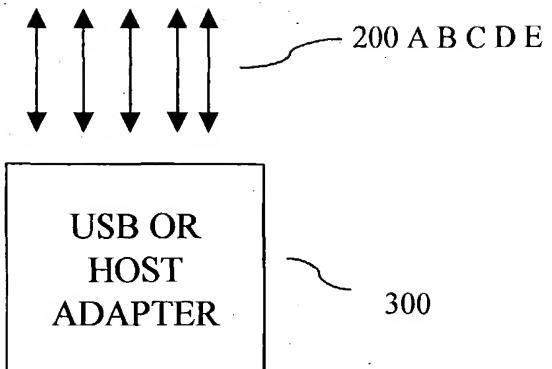
200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

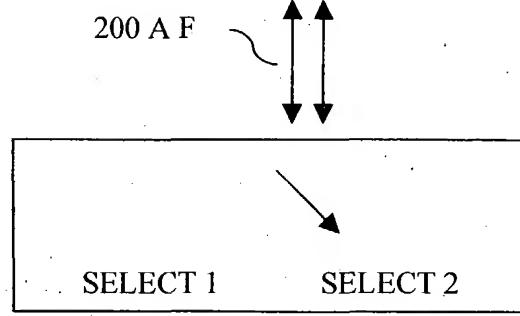
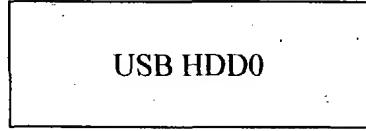
200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES



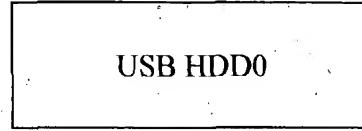
SERIAL HARD  
DISK DRIVE  
SELECTOR

400



500

200 A F



200 A F

400

FIGURE 5: THIS INVENTION USED IN THE ENVIRONMENT OF USB  
SERIAL HARD DISK DRIVES; SELECTION 2 MADE.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

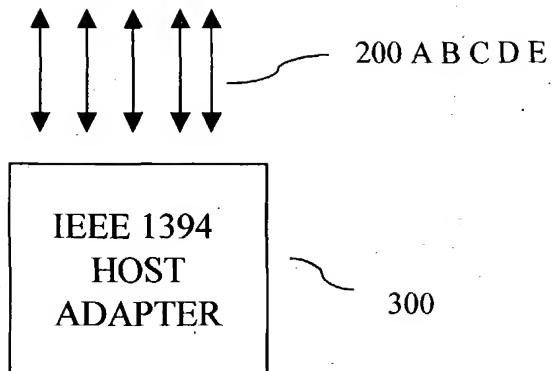
200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

200E - TIMING TRACES OF BUS  
SYSTEM

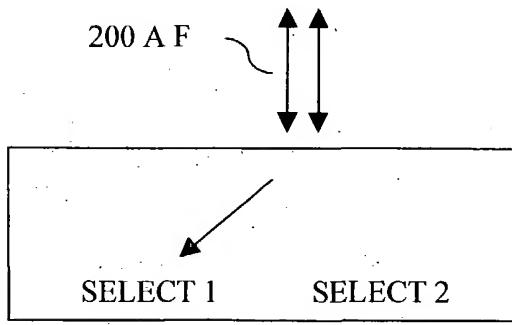
200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES



SERIAL HARD  
DISK DRIVE  
SELECTOR

400

500



200 A F

IEEE 1394 HDD0

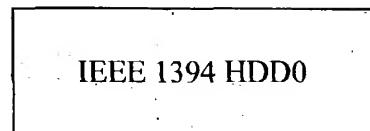


FIGURE 6: THIS INVENTION USED IN THE ENVIRONMENT OF IEEE 1394  
SERIAL HARD DISK DRIVES; SELECTION 1 MADE.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

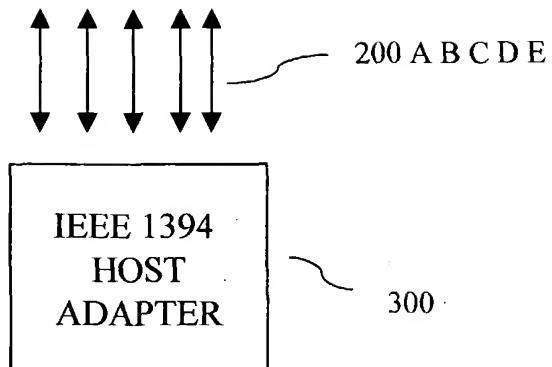
200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

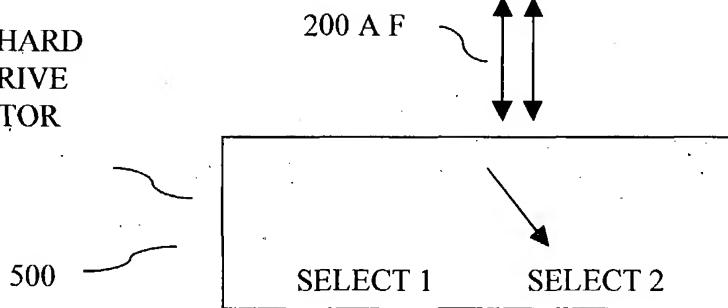
200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES



SERIAL HARD  
DISK DRIVE  
SELECTOR



400

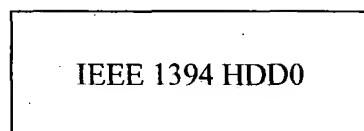
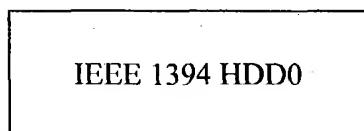


FIGURE 7: THIS INVENTION USED IN THE ENVIRONMENT OF IEEE 1394

SERIAL HARD DISK DRIVE; SELECTION 2 MADE.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

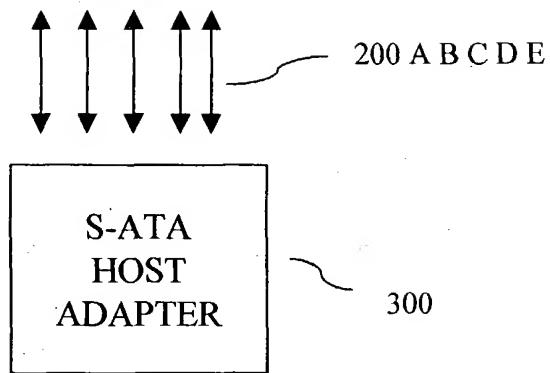
200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

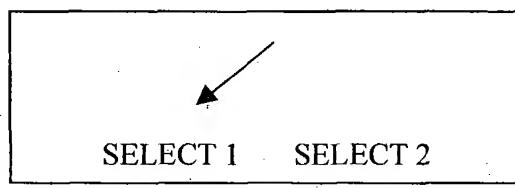
200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES



SERIAL HARD  
DISK DRIVE  
SELECTOR

200 F



400

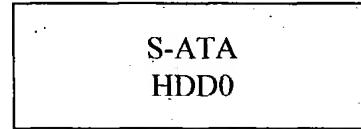
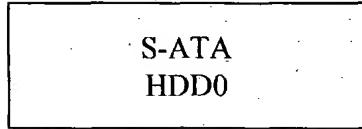


FIGURE 8: THIS INVENTION USED IN THE ENVIRONMENT OF S-ATA  
SERIAL HARD DISK DRIVES; SELECTION 1 MADE.

200A - POWER DELIVERY TRACES OF  
BUS SYSTEM

200B - COMMAND DELIVERY TRACES  
OF BUS SYSTEM

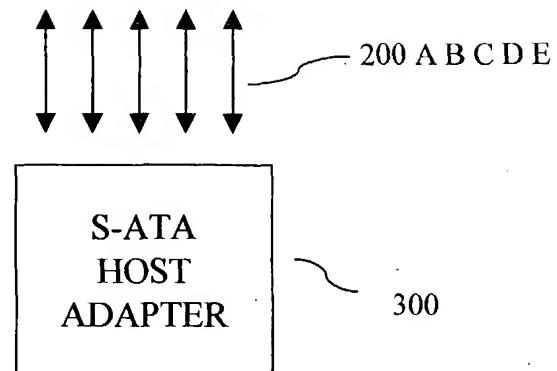
200C - ADDRESS DELIVERY TRACES  
OF BUS SYSTEM

200D - DATA DELIVERY TRACES OF  
BUS SYSTEM

200E - TIMING TRACES OF BUS  
SYSTEM

200F - COMBINED COMMAND,  
ADDRESS, AND DATA TRACES

SERIAL HARD  
DISK DRIVE  
SELECTOR



200 F



300

100

DC POWER

400

400

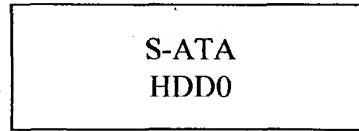
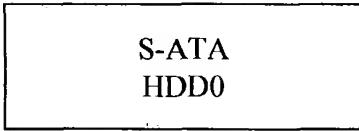


FIGURE 9: THIS INVENTION USED IN THE ENVIRONMENT OF S-ATA  
SERIAL HARD DISK DRIVES; SELECTION 2 MADE.

200A - POWER DELIVERY  
TRACES OF BUS SYSTEM

200B - COMMAND  
DELIVERY TRACES OF BUS  
SYSTEM

200C - ADDRESS DELIVERY  
TRACES OF BUS SYSTEM

200D - DATA DELIVERY  
TRACES OF BUS SYSTEM

200E - TIMING TRACES OF  
BUS SYSTEM

200F - COMBINED  
COMMAND, ADDRESS, AND  
DATA TRACES

200 A B C D E

501 POWER CONTROL DELIVERY  
COMPONENT

502 ADDRESS,COMMAND, AND  
DATA CONTROL DELIVERY  
COMPONENT

503 MASTER CONTROL  
COMPONENT

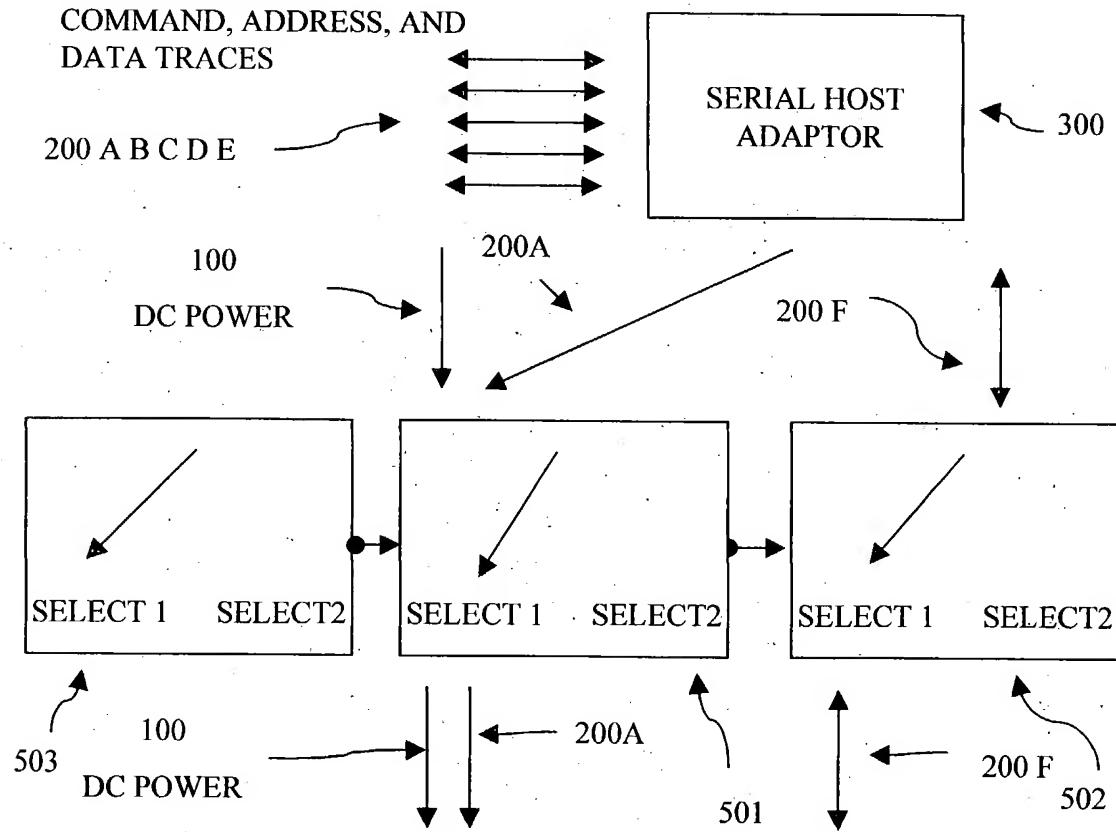


FIGURE 10: THIS INVENTION; SELECTION 1 MADE.

200A - POWER DELIVERY  
TRACES OF BUS SYSTEM

200B - COMMAND  
DELIVERY TRACES OF BUS  
SYSTEM

200C - ADDRESS DELIVERY  
TRACES OF BUS SYSTEM

200D - DATA DELIVERY  
TRACES OF BUS SYSTEM

200E - TIMING TRACES OF  
THE BUS SYSTEM

200F - COMBINED  
COMMAND, ADDRESS, AND  
DATA TRACES

501 POWER CONTROL DELIVERY  
COMPONENT

502 ADDRESS,COMMAND, AND  
DATA CONTROL DELIVERY  
COMPONENT

503 MASTER CONTROL  
COMPONENT

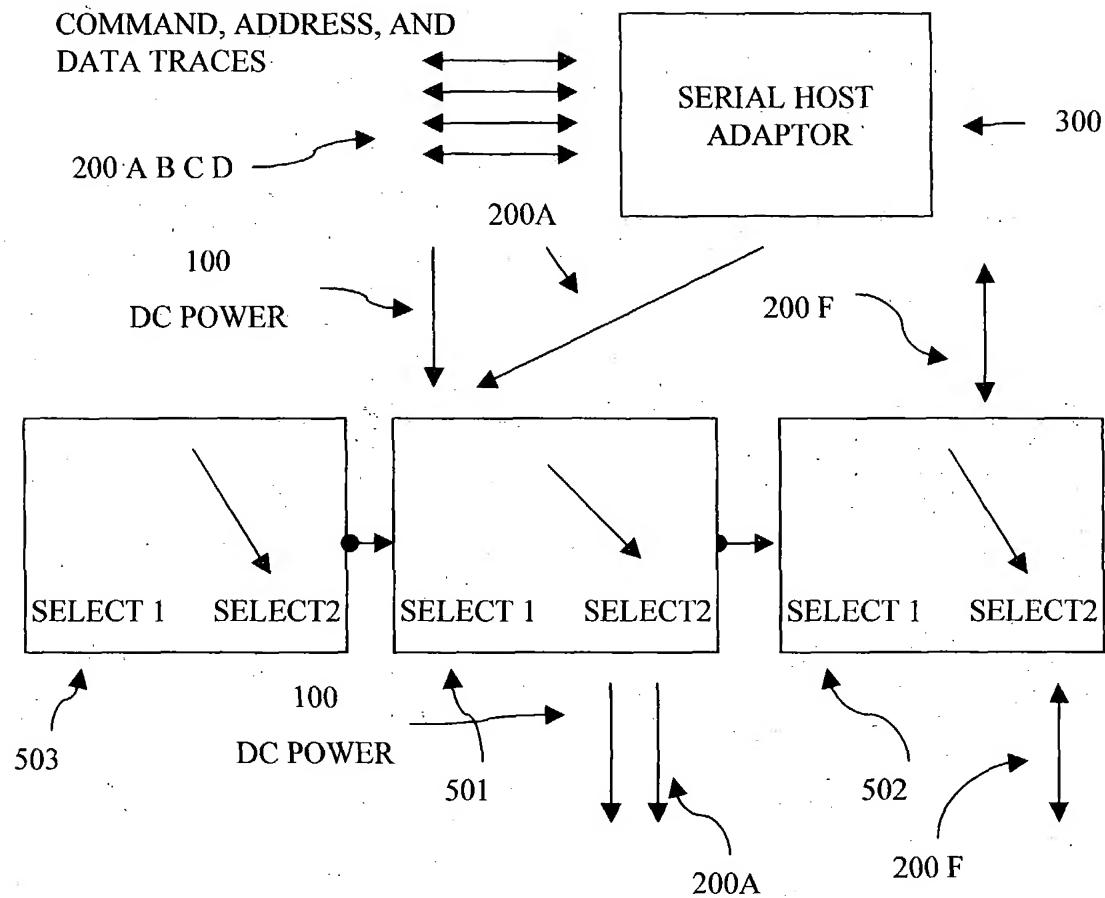


FIGURE 11: THIS INVENTION; SELECTION 2 MADE.

PIN #	PIN TITLE	PIN FUNCTION
1	VCC	POWER DELIVERY FROM BUS SYSTEM
2	-DATA	ADDRESS, COMMAND, AND DATA TRANSFER
3	+DATA	ADDRESS, COMMAND, AND DATA TRANSFER
4	GROUND	GROUND
5	SHELL	GROUND, DRAIN WIRE

FIGURE 12: UNIFORM SERIAL BUS SERIAL HARD DISK DRIVE PINNOUT

PIN #	PIN TITLE	PIN FUNCTION
1	TPA+	ADDRESS, COMMAND, AND DATA TRANSFER
2	TPB+	ADDRESS, COMMAND, AND DATA TRANSFER
3	GROUND	GROUND
4	+ VOLTAGE	POWER DELIVERY FROM SYSTEM BUS
5	TPB-	ADDRESS, COMMAND, AND DATA TRANSFER
6	TPA -	ADDRESS, COMMAND, AND DATA TRANSFER
7	SHELL	GROUND

FIGURE 13: IEEE 1394 SERIAL HARD DISK DRIVE PINNOUT

PIN #	PIN TITLE	PIN FUNCTION
S1	GROUND	GROUND
S2	A+	ADDRESS, COMMAND AND DATA TRANSFER
S3	A-	ADDRESS, COMMAND AND DATA TRANSFER
S4	GROUND	GROUND
S5	B-	ADDRESS, COMMAND AND DATA TRANSFER
S6	B+	ADDRESS, COMMAND AND DATA TRANSFER
S7	GROUND	GROUND
P1	+3.3V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P2	+3.3V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P3	+3.3V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P4	GROUND	GROUND
P5	GROUND	GROUND
P6	GROUND	GROUND
P7	+5.0V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P8	+5.0V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P9	+5.0V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P10	GROUND	GROUND
P11	GROUND	GROUND
P12	GROUND	GROUND
P13	+12.0V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P14	+12.0V	POWER DELIVERY FROM SYSTEM POWER SUPPLY
P15	+12.0V	POWER DELIVERY FROM SYSTEM POWER SUPPLY

FIGURE 14: SERIAL ATA HARD DISK DRIVE PINNOUT